

Application Serial No.: 09/915,385  
Reply to Office Action dated September 5, 2003

IN THE SPECIFICATION

Please replace the paragraph beginning at page 9, line 2, with the following rewritten paragraph:

As shown in FIG. 1A showing a schematic sectional view of the conventional semiconductor laser device, when an n-Al<sub>0.35</sub>Ga<sub>0.65</sub>As current blocking layer 32 is grown on an In<sub>0.49</sub>Ga<sub>0.51</sub>P ~~second~~ first etch stop layer 30, an intermediate layer 31 is generated at the interface thereof having a complicated and non-uniform composition containing the atoms of the ~~second~~ first etch stop layer 30 and the current blocking layer 32.

Please replace the paragraph beginning at page 9, line 10, with the following rewritten paragraph:

When the current blocking layer 32 is ideally grown on the ~~second~~ first etch stop layer 30 or, for example, the current blocking layer 32 is grown in experimentally ideal conditions, the intermediate layer 31 is not grown. However, in the actual growing step, the intermediate layer 31 is grown made of the atoms complicatedly mixed when the current blocking layer 32 is grown at a practical speed by using the MOCVD method.

Please replace the paragraph beginning at page 9, line 18, with the following rewritten paragraph:

Since the etching rate is also non-uniform in the intermediate layer 31, the surface of the p-In<sub>0.49</sub>Ga<sub>0.51</sub>P ~~second~~ first etch stop layer 30 is non-uniformly etched to make an uneven surface when the n-Al<sub>0.35</sub>Ga<sub>0.65</sub>As current blocking layer 32 is etched.

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Please replace the paragraph beginning at page 9, line 23, with the following rewritten paragraph:

Accordingly, as shown in FIG. 1B, when the ~~second~~ first etch stop layer 30 is as thin as below 10 nm, partial apertures 29 are perforated in the second etch stop layer 30 such that the p-GaAs ~~first~~ second etch stop layer 28 and the n-Al<sub>0.3</sub>Ga<sub>0.7</sub>As cladding layer 26 are also etched.

Please replace the paragraph beginning at page 10, line 16, with the following rewritten paragraph:

The intermediate layer formed at the interface between the current blocking layer 32 and the ~~second~~ first etch stop layer 30 causes a problem that the ~~second~~ first etch stop layer 30 around the intermediate layer is difficult to be locally removed.

Please replace the paragraph beginning at page 10, line 21, with the following rewritten paragraph:

The repeated experiments by the inventors have reached to the present invention under the conception that a compound semiconductor layer such as a GaAs layer made of a material different from those of the current blocking layer 32 and the ~~second~~ first etch stop layer 30 is inserted therebetween such that the current blocking layer 32 and the ~~second~~ first etch stop layer 30 are separated from each other to prevent the formation of the intermediate layer, thereby increasing the anti-etching durability of the ~~second~~ first etch stop layer 30.

Please replace the paragraph beginning at page 12, line 16, with the following

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rewritten paragraph:

Further, on the second  $\text{Al}_{0.2}\text{Ga}_{0.8}\text{As}$  SCH layer 24 are sequentially stacked a second p- $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$  cladding layer 26, a ~~first~~ second p-GaAs etch stop layer 28 having a thickness of 10 nm, a ~~second~~ first n- $\text{In}_{0.49}\text{Ga}_{0.51}\text{P}$  etch stop layer 30 having a thickness of 10 nm, an n- $\text{Al}_{0.35}\text{Ga}_{0.65}\text{As}$  current blocking layer 32 having a thickness of 200 nm, and a p-GaAs cap layer 34, and different from the conventional semiconductor laser device, an n-GaAs layer 52 having a thickness of 5 nm is disposed between the second etch stop layer 30 and the current blocking layer 32.

Please replace the paragraph beginning at page 130, line 4, with the following rewritten paragraph:

Since the existence of the n-GaAs layer 52 separates the n- $\text{Al}_{0.35}\text{Ga}_{0.65}\text{As}$  current blocking layer 32 and the ~~second~~ first n- $\text{In}_{0.49}\text{Ga}_{0.51}\text{P}$  etch stop layer 30 from each other, the interface heretofore formed is not substantially formed between the current blocking layer 32 and the second etch stop layer 30. Accordingly, the intermediate layer made of the variety of atoms non-uniformly mixed is not formed.

Please replace the paragraph beginning at page 14, line 5, with the following rewritten paragraph:

Further, on the second  $\text{Al}_{0.2}\text{Ga}_{0.8}\text{As}$  SCH layer 24 are sequentially stacked the second p- $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$  cladding layer 26, the ~~first~~ second p-GaAs etch stop layer 28 having the thickness of 10 nm, the ~~second~~ first n- $\text{In}_{0.49}\text{Ga}_{0.51}\text{P}$  etch stop layer 30 having the thickness of 10 nm, the GaAs layer 52 having a thickness of 5 nm, the n- $\text{Al}_{0.35}\text{Ga}_{0.65}\text{As}$  current blocking

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layer 32 having the thickness of 200 nm, and the p-GaAs cap layer 34.

Please replace the paragraph beginning at page 14, line 16, with the following rewritten paragraph:

Subsequently, as shown in FIG. 3B, the p-GaAs cap layer 34, the n-Al<sub>0.35</sub>Ga<sub>0.65</sub>As current blocking layer 32 and the n-GaAs layer 52 are etched using an etching solution containing an etchant such as tartaric acid and citric acid having etching selectivity with respect to the ~~second~~ first n-In<sub>0.49</sub>Ga<sub>0.51</sub>P etch stop layer 30. After the stop of the etching by using the ~~second~~ first etch stop layer 30, the etching mask is removed.

Please replace the paragraph beginning at page 14, line 24, with the following rewritten paragraph:

Then, as shown in FIG. 3C, the second etch stop layer 30 is removed by using a hydrochloric acid-based etchant (HCl : H<sub>2</sub>PO<sub>4</sub> = 1 : 3) having etching selectivity with respect to the ~~first~~ second etch stop layer 28.

Please replace the paragraph beginning at page 15, line 3, with the following rewritten paragraph:

Thereafter, the p-Al<sub>0.3</sub>Ga<sub>0.7</sub>As cladding layer 38 and the GaAs cap layer 34 are regrown on the p-GaAs cap layer 34 and the exposed ~~first~~ second etch stop layer 28. The resulting structure is referred to as the self-aligned structure (SAS).

Please replace the paragraph beginning at page 15, line 16, with the following

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rewritten paragraph:

The ~~second~~ first etch stop layer 30 is not hardly present having the uniform thickness on the entire layer during the etching of the current blocking layer because the formation of the intermediate layer prevents the local sway of the ~~second~~ first etch stop layer 30. Therefore, the anti-etch stopping durability of the ~~second~~ first etch stop layer 30 increases, and even if the thickness of the ~~second~~ first etch stop layer 30 is 10 nm or less, the apertures are not locally perforated due to the etching.

Please replace the paragraph beginning at page 16, line 4, with the following rewritten paragraph:

The prevention of the intermediate layer formation by the insertion of the n-GaAs layer 52 does not arise a conventional problem that the smooth etching of the ~~second~~ first etch stop layer 30 is hardly conducted by the intermediate layer formation.